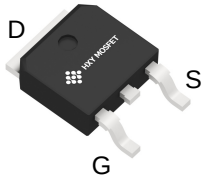
NTD25P03LG-HXY

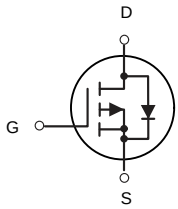
P-Channel Enhancement Mode MOSFET

Description

The NTD25P03LG-HXY uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



TO-252-2L (DPAK)



P-Channel MOSFET

General Features

V_{DS} = -30V I_D =-20A

$R_{DS(ON)}$ < 42 mΩ @ V_{GS}=10V

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
NTD25P03LG-HXY	TO-252-2L(DPAK)	20P03 XXX YYYY	2500

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	-20	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	-15	A
IDM	Pulsed Drain Current[2]	-50	A
P_D@T_C=25℃	Total Power Dissipation[4]	29	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction-ambient [1]	75	℃/W
$R_{\theta}JC$	Thermal Resistance Junction-Case[1]	4.32	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Tp	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	VGS=0V , ID=-250uA	-30		---	V
△BVDSS/△TJ	BVDSS Temperature Coefficient	Reference to 25℃ , ID=-1mA	---	22	---	V/℃
RDS(ON)	Static Drain-Source On-Resistance2	VGS=-10V , ID=-15A	32	38	42	mΩ
		VGS=-4.5V , ID=-10A	48	---	58	
VGS(th)	Gate Threshold Voltage	VGS=VDS , ID =-250uA	-1.0	---	-2.5	V
△VGS(th)	VGS(th) Temperature Coefficient		---	4.6	---	mV/℃
IDSS	Drain-Source Leakage Current	VDS=-24V , VGS=0V , TJ=25℃	---	---	-1	uA
		VDS=-24V , VGS=0V , TJ=55℃	---	---	-5	
IGSS	Gate-Source LeakageCurrent	VGS=±25V , VDS=0V	---	---	±100	nA
gfs	Forward Transconductance	VDS=-5V , ID=-15A	---	19	---	S
Rg	Gate Resistance	VDS=0V , VGS=0V , f=1MHz	---	13	---	
Qg	Total Gate Charge (-4.5V)	VDS=-15V , VGS=-4.5V , ID=-15A	---	12.5	---	nC
Qgs	Gate-Source Charge		---	5.4	---	
Qgd	Gate-Drain Charge		---	5	---	
Td(on)	Turn-On Delay Time	VDD=-15V , VGS=-10V , RG=3.3 , ID=-15A	---	4.4	---	ns
Tr	Rise Time		---	11.2	---	
Td(off)	Turn-Off Delay Time		---	34	---	
Tf	Fall Time		---	18	---	
Ciss	Input Capacitance	VDS=-15V , VGS=0V , f=1MHz	---	1345	---	pF
Coss	Output Capacitance		---	194	---	
Crss	Reverse Transfer Capacitance		---	158	---	

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

Figure 5 Output Characteristics

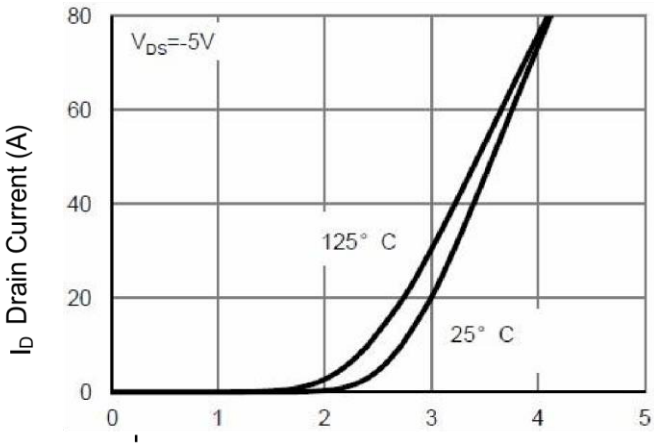


Figure 7 Transfer Characteristics

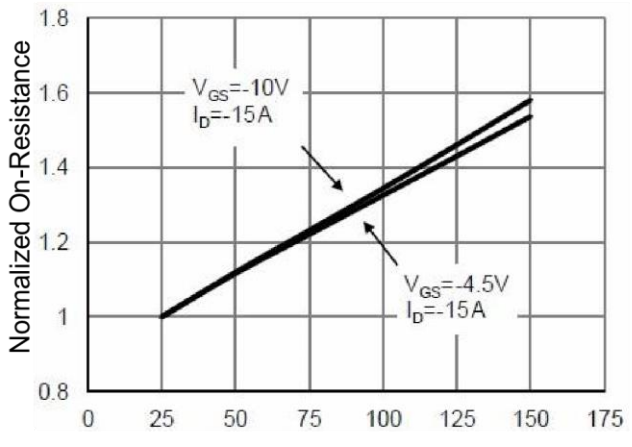


Figure 8 Drain-Source On-Resistance

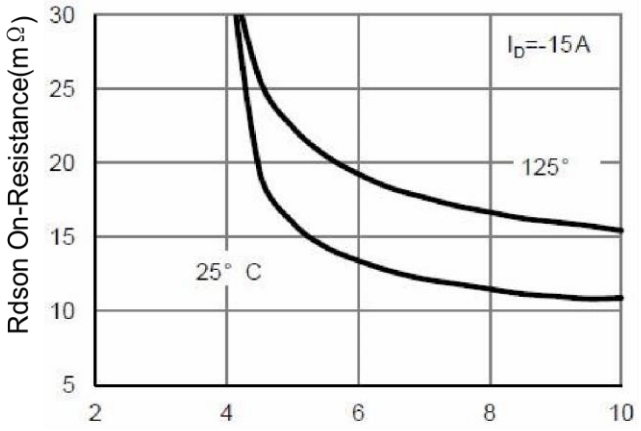


Figure 9 Rdson vs Vgs

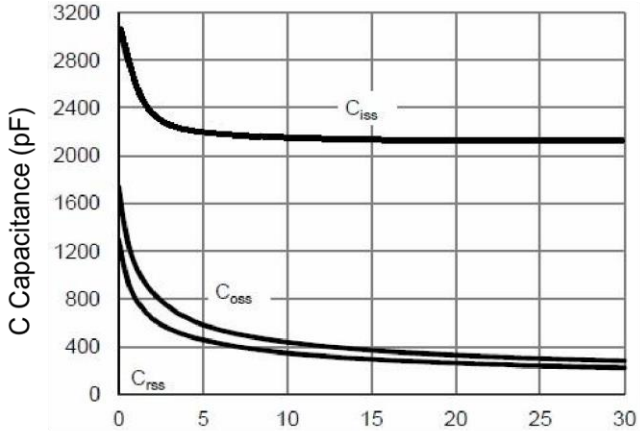


Figure 10 Capacitance vs Vds

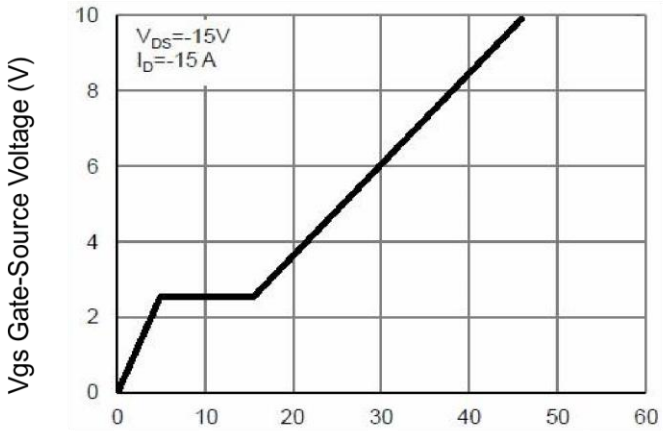


Figure 11 Gate Charge

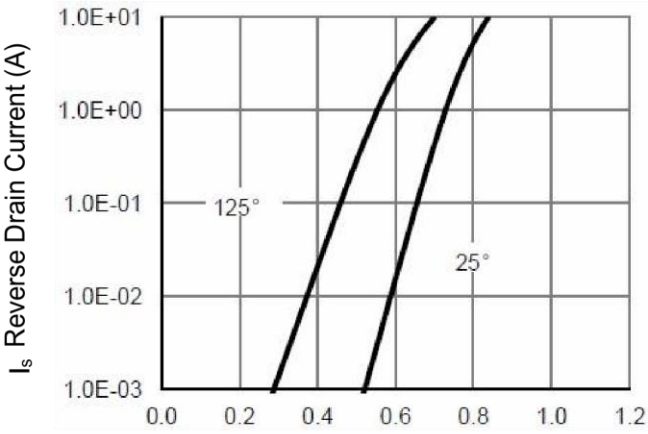


Figure 12 Source- Drain Diode Forward

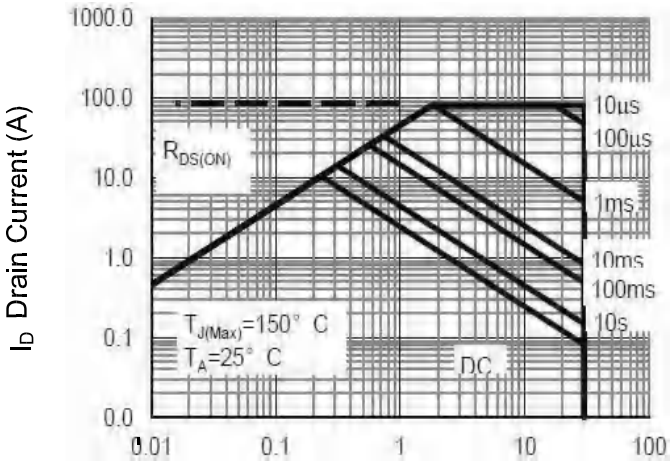


Figure 13 Safe Operation Area

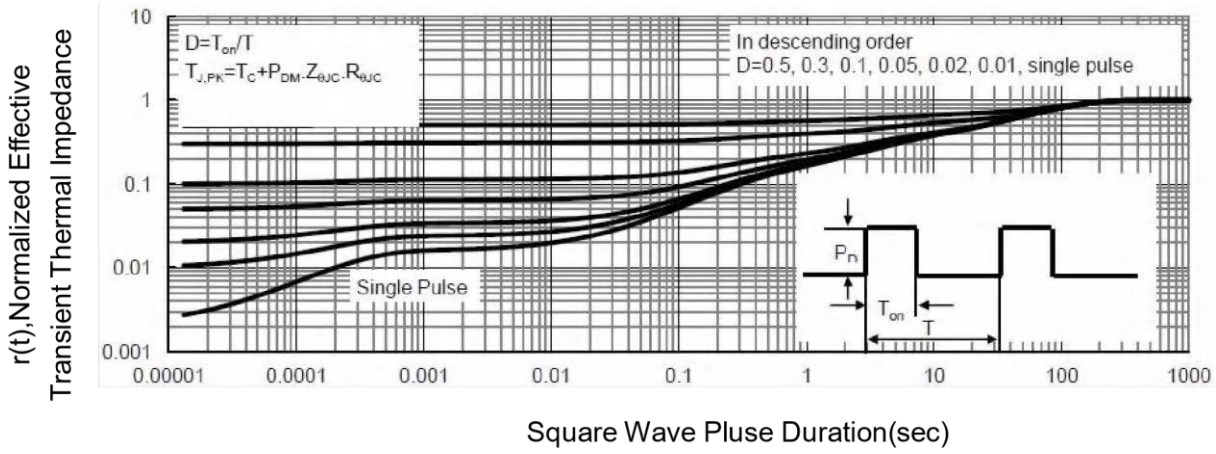
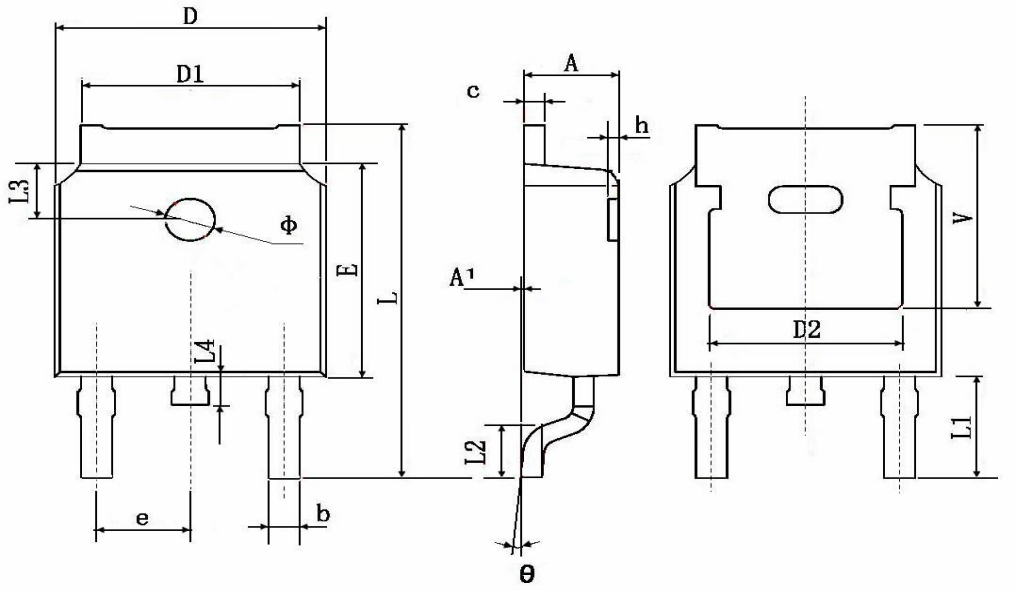


Figure 14 Normalized Maximum Transient Thermal Impedance

TO-252-2L(DPAK) Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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HAD8542ARZ IRLML6246PBF BZT52C13 HMCP602-I/SN HXY8205ES MMBT3904T SQJA04EP-T1_BE3
TPSMB28A-VR BZT52C3V3S HXY2300MI P6SMB200A SS510C SS5150B HC3D10170A